

### **REMARKS**

In the Office Action dated April 29, 2009, the Examiner:  
rejected claims 1, 4 and 9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,727,307 to Gstöhl ("Gstöhl ") in view of Japanese Patent No. JP 6-80377 to Matsuoka ("Matsuoka"); and  
rejected claims 5 and 10 under 35 U.S.C. § 103(a) as being obvious over Gstöhl in view of Matsuoka and further in view of U.S. Patent No. 2,708,246 to Dunn ("Dunn").

In the Office Action, claims 1, 4-5 and 9-10 were pending. Claims 1, 4-5 and 9-10 are presented for re-consideration in light of the following remarks.

The Examiner rejected claims 1, 4 and 9 under 35 U.S.C. § 103(a) as being obvious over Gstöhl in view of Matsuoka. A rejection under 35 U.S.C. § 103(a) is improper unless the Examiner establishes a *prima facie* case of obviousness. A *prima facie* case of obviousness is not established unless the prior art references, either alone or in combination, teach or suggest **each and every** claim recitation. Claims 4 and 9 depend from claim 1, and include additional recitations thereto.

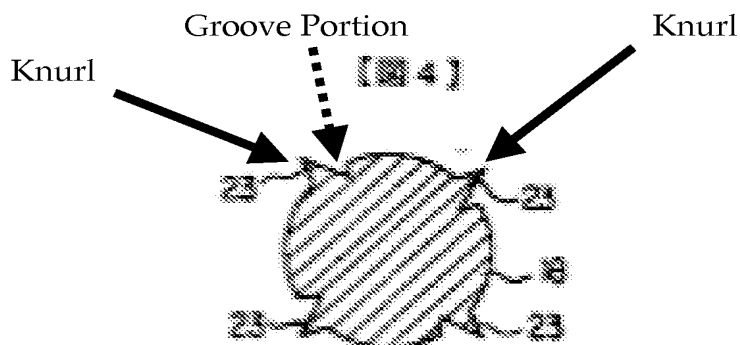
Applicants' claim 1 recites:

A shaft, used for an electric motor, to which a commutator to be fitted having a fit hole is fitted / fixed, comprising:  
four strips of knurls,  
wherein each strip of knurls is formed on an outer circumferential surface of the shaft as to extend along an axial direction,  
wherein each strip of knurls is formed into an acute-angled triangle,  
wherein the strips of knurls are evenly spaced circumferentially about the shaft as measured from a vertex of the acute-angled triangles of each knurl,  
*wherein a pair of groove portions is formed between a pair of knurls at each position substantially adjacent to those knurls and another pair of groove portions is formed between another pair of knurls at each position substantially adjacent to those knurls,*  
wherein the vertexes protrude radially outward from the outer circumferential surface of the shaft and the groove portions sink radially inward from the outer circumferential surface of the shaft, and

*wherein the outer circumferential surface of the shaft is placed between each pair of knurls and each pair of groove portions. (emphasis added.)*

Gstöhl and Matsuoka, either alone or in combination, do not teach or suggest **each and every** recitation of Applicants' claim 1. For instance, Gstöhl does not teach or suggest that *a pair of groove portions is formed between a pair of knurls at each position substantially adjacent to those knurls; another pair of groove portions is formed between another pair of knurls at each position substantially adjacent to those knurls; or that the outer circumferential surface of the shaft is placed between each pair of knurls and each pair of groove portions* as recited in claim 1. The Examiner admits this in the Office Action (Office Action, page 3, lines 10-13 and 17-18).

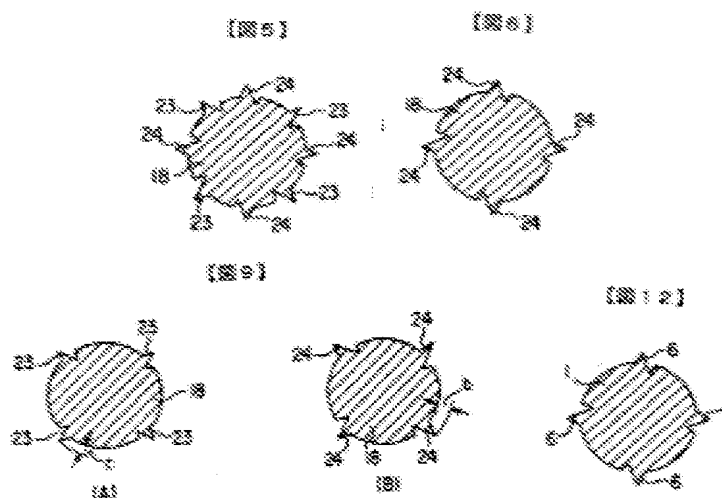
Matsuoka does not add to the teachings of Gstöhl, at least in that Matsuoka also does not teach or suggest *a pair of groove portions is formed between a pair of knurls* as recited in claim 1. Instead, Matsuoka teaches a shaft having only one groove portion formed between each knurl, as illustrated below:



*Matsuoka – Figure 4*

In other words, Matsuoka teaches a pattern of alternating knurl-and-groove portions that continues around the circumference of the shaft.

If anything, Matsuoka teaches away from *a pair of groove portions being formed between a pair of knurls* because each relevant Figure of Matsuoka depicts the shaft in the same manner (i.e., having only one groove portion formed between each knurl), as illustrated below:



Matsuoka – Figures 5-6, 9 and 12

Thus, even though Matsuoka discloses alternative shaft designs, Matsuoka does not teach or suggest that *a pair of groove portions is formed between a pair of knurls* as recited in claim 1.

Since Matsuoka does not teach or suggest that *a pair of groove portions is formed between a pair of knurls*, Matsuoka cannot possibly teach or suggest that *another pair of groove portions is formed between another pair of knurls* as recited in claim 1. If anything, Matsuoka teaches away from this recitation for the same reason discussed above.

Further, since Matsuoka does not teach or suggest that *a pair of groove portions is formed between the knurls*, Matsuoka cannot possibly teach or suggest that *the outer circumferential surface of the shaft is placed between each pair of knurls and each pair of groove portions* as recited in claim 1. If anything, Matsuoka teaches away from *the outer circumferential surface* as recited in claim 1 for the same reason discussed above.

Thus, Matsuoka does not teach or suggest that *a pair of groove portions is formed between a pair of knurls at each position substantially adjacent to those knurls; another pair of groove portions is formed between another pair of knurls at each position substantially adjacent to those knurls; or that the outer circumferential surface of the shaft is placed between each pair of knurls and each pair of groove portions* as recited in claim 1.

Therefore, Gstöhl and Matsuoka, either alone or in combination, do not teach or suggest **each and every** recitation of Applicants' claim 1. Accordingly, Applicants respectfully submit that the rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Gstöhl in view of Matsuoka is improper for at least these reasons, and should be withdrawn.

Since claims 4 and 9 depend, either directly or indirectly, from claim 1, and include additional recitations thereto, Applicants respectfully submit that the rejection of claims 4 and 9 under 35 U.S.C. § 103(a) as unpatentable over Gstöhl in view of Matsuoka is improper for at least the same reasons, and should be withdrawn.

The Examiner rejected claims 5 and 10 under 35 U.S.C. § 103(a) as being obvious over Gstöhl and Matsuoka in view of Dunn. Claims 5 and 10 depend, either directly or indirectly, from claim 1, and include additional recitations thereto.

Gstöhl and Matsuoka, either alone or in combination, do not teach or suggest that *a pair of groove portions is formed between a pair of knurls at each position substantially adjacent to those knurls; another pair of groove portions is formed between another pair of knurls at each position substantially adjacent to those knurls; or that the outer circumferential surface of the shaft is placed between each pair of knurls and each pair of groove portions* as recited in Applicants' claim 1, as discussed above.

Dunn does not add to the teachings of Gstöhl and Matsuoka, at least in that the Examiner does not even assert Dunn for these recitations (Office Action, pages 5-6, paragraphs 5-6).

Therefore, Gstöhl, Matsuoka and Dunn, either alone or in combination, do not teach or suggest **each and every** recitation of Applicants' claim 1. Since claims 5 and 10 depend, either directly or indirectly, from claim 1, Applicants respectfully submit that the rejection of claims 5 and 10 under 35 U.S.C. § 103(a) as unpatentable over Gstöhl in view of Matsuoka is improper for at least the same reasons, and should be withdrawn.

Having traversed each and every rejection, Applicants respectfully request claims 1, 4-5 and 9-10 be passed to issue.

Application Serial No.: 10/546,622  
Office Action dated: April 29, 2009  
Response to Office Action dated: July 28, 2009

Applicants believe no additional fees are due in connection with this Amendment and Response. If any additional fees are deemed necessary, Attorneys for Applicants hereby authorize the Commissioner to deduct such fees from our Deposit Account 13-0235.

Respectfully submitted,

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